

**REMARKS**

Review and reconsideration on the merits are requested.

**Formalities**

Regarding the PTO/SB/08 forms, as Applicants understand the initialing, one form is crossed out (the form with the Abstracts) but the Abstracts were considered in the PTO/SB/08 which the Examiner initialed. If Applicants are in error, the Examiner is requested to contact the undersigned.

**The Priority Document**

The Examiner is requested to acknowledge receipt of the priority document. If not received, the Examiner is requested to notify the undersigned.

**Claim Rejections - 35 U.S.C. § 112, Second Paragraph**

Briefly treating these rejections:

Claim 21 is cancelled.

Antecedent basis is provided for “grains” in claim 26.

In claim 30 “comprising calcining”, which basically follows the Examiner’s suggestion, is used.

In claim 22, the Examiner’s suggested language is adopted.

Withdrawal is requested.

**The Prior Art**

U.S. 5,756,408 Terashi et al (Terashi).

### **The Rejection**

Claims 18-21, 23-26, 29-34 are rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(e) as obvious over Terashi.

The Examiner's reading of Terashi and application of Terashi is set forth in the Action and will not be repeated here except as necessary to an understanding of Applicants traversal which is now presented.

### **Traversal**

The Examiner's attention is directed to amended claim 18 since Applicants focus on claim 18.

Distinguishing features of the claimed invention are:

- (1) the high-strength, low-temperature-sintered ceramic composition of the present application has a structure comprising crystal phases of  $\text{SrAl}_2\text{Si}_2\text{O}_8$ ,  $\text{Al}_2\text{O}_3$ , titanium oxide and silicon oxide, respectively,
- (2) at least part of the crystal phase of  $\text{SrAl}_2\text{Si}_2\text{O}_8$  determined by an X-ray diffraction measurement is composed of hexagonal  $\text{SrAl}_2\text{Si}_2\text{O}_8$ , and
- (3) the ceramic composition as such has a bending strength of 300 MPa or more, thereby providing a high-strength, low-temperature-sintered ceramic composition capable of being sintered simultaneously with a low-melting-point metal to thereby form a circuit substrate resistant to cracking and breakage (see page 2, lines 20-23 of the specification).

In contrast, Terashi teaches a glass-ceramic sintered body most preferred as an insulation substrate of a circuit board, a substrate board for mounting an integrated circuit or an electronic

component part, which can be sintered as a low as 800°C to 1000°C for a multilayer wiring substrate provided with a wiring of cooper, silver and gold (column 1, lines 6-12 of Terashi).

Terashi thus teaches a glass-ceramic sintered body containing Si, Al, Zn, at least one element of Group 2a of the periodic table, at least one element of Group 4a of the periodic table, boron and oxygen, as constituent elements, which has a dielectric constant of not less than 8.5 and a fracture strength of not less than 20 kg/cm<sup>2</sup>, where the sintered body comprises a glass phase and crystalline phases comprising a first crystalline phase of a composite oxide containing Si, Al and Sr, or Si, Al, Ca and Sr, the first crystalline phase comprising a **slawsonite crystalline phase**, a second crystalline phase of crystalline ZrO<sub>2</sub> and a third crystalline phase of crystalline spinel (see claim 1 of Terashi).

As is clear from Fig. 4 of Terashi, an X-ray diffraction measurement chart of the sintered body obtained **at a temperature of 950° to 1000°C** shows the glass-ceramic sintered body shown in Fig. 2 is composed of a first crystalline phase of a (Ca, Sr)--Al--Si--O type composite oxide crystal, a second crystalline phase of a ZrO<sub>2</sub>-type crystal, and a third crystalline phase of a spinel-type crystal and a perovskite-type crystal, where the (Ca, Sr)--Al--Si--O type composite oxide crystal is an anorthite-type crystalline phase of CaAl<sub>2</sub>Si<sub>2</sub>O<sub>8</sub> or a **slowsonite**-type crystalline phase of SrAl<sub>2</sub>Si<sub>2</sub>O<sub>8</sub>. See column 2, lines 52-57 (for Fig. 2); colun 3, lines 12-14 (for Fig. 4); column 7, lines 18-33; column 15, line 26 to column 16, line 2; and Table 2 at columns 15 and 16, of Terashi.

This means that firing below 1000°C does not form hexagonal SrAl<sub>2</sub>Si<sub>2</sub>O<sub>8</sub> but forms slawsonite SrAl<sub>2</sub>Si<sub>2</sub>O<sub>8</sub>, whose crystalline phase is monoclinic, not hexagonal. Terashi thus does

not teach or suggest the formation of hexagonal  $\text{SrAl}_2\text{Si}_2\text{O}_8$ . Further, the slawsonite crystalline phase is expressed usually by  $(\text{Sr}, \text{Ca})\text{Al}_2\text{Si}_2\text{O}_8$ .

Accordingly, one of ordinary skill in the art referring to Terashi, which is silent at least with respect to distinguishing feature (2) above, would not find claim 18 as amended to be anticipated nor obvious.

Respect to the remaining claims, Applicants rely upon their traversal regarding claim 18, offering a few additional remarks as follows.

Claims 28 and 29 are believed patentable in view of the independent recitation of Bi.

With respect to claim 30 as amended, and claims 36, 31, 32/31, 33/31 and 34/31, patentability is believed clear in view of their dependency from claim 18 (amended).

Withdrawal of all rejections and allowance is requested.

#### **Basis for Claim Amendments**

The amendments to claim 18, find support in Fig. 1; page 3, lines 19-20; page 4, lines 5-7 and lines 17023; and page 17, line 10 to page 18, line 1, of the specification.

The amendments to claim 19, find support at page 17, line 16 to page 18, line 1 of the specification.

The amendments to claim 20, find support at page 4, lines 8-14, of the specification.

The amendments to claim 22, find support at page 3, lines 11-14, of the specification.

The amendments to claim 23, find support at page 4, lines 19-25, of the specification.

The amendments to claim 24, find support at page 4, lines 26-27, of the specification.

The amendments to claim 25, find support at page 5, lines 4-6, of the specification.

The amendments to claim 26, find support at page 4, lines 5-11 and page 5, lines 27-28, of the specification.

The amendments to claim 27, find support in original claim 12 as filed, or page 5, lines 8-10 and line 16 of the specification.

The amendments to claim 28, find support at page 5, lines 7-16; and Samples No. 1-3 in Table 1 (Example 1) at page 14, of the specification.

The amendments to claim 29, find support at page 5, lines 17-26; and Sample Nos. 8-13 in Table 2 (Example 2) at page 17, of the specification.

The amendments to claim 30 and new claim 36 find support at page 6, lines 1-7; and, for example, page 12, line 25 to page 13, lines 24 of the specification.

New claim 35 find support at page 3, lines 14-15; and page 4, lines 15-16, of the specification.

#### **Allowable Subject Matter**

Claims 22, 27 and 28 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base and any intervening claim.

With respect to the remaining prior art, since it is not relied upon to reject claims, Applicants do not comment thereon.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Application No. 10/337,461

Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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